



Speaker

Chandrakant Desai Memorial Webinar Series*

Energy Tunnels for a Sustainable Future in Geomechanics

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Tuesday, December 9 | 9:00—10:30 A.M. (U.S. Central Time)

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Hosted via TEAMS

ABSTRACT

The use of geothermal energy for heating and cooling purposes is an environmentally friendly and cost-effective alternative with the potential to replace fossil fuels and help mitigate global warming as well. In the boost of innovation of the tunnelling industry, to face the challenges posed by climate change and the need for sustainable growth of cities and territories, it is of interest to embody the innovative use of the tunnel linings to also produce thermal energy for conditioning of buildings, cooling of tunnel air or de-icing of infrastructures. Relevant examples from the Author's recent experience, related to deep and shallow thermally activated underground excavations, will be revealed to highlight the methodological steps to be adopted for the geothermal potential evaluation and achieve a successful design of the integrated technology. These include specific ground thermal and hydraulic characterization, GIS procedures and coupled numerical modelling. Example applications will show how energy tunnels may help unlock new opportunities for sustainability in geomechanics.

BIO

Marco Barla is a Full Professor of Geotechnical Engineering at the Politecnico di Torino (Italy) and an expert consultant for tunnelling and slope stability problems. He leads a research group active in the field of laboratory testing on soils and rocks, numerical modeling, tunnel excavation, slope stability, geotechnical monitoring and energy geostructures (www.rockmech.polito.it). He is a IACMAG Board of Directors member and the President of ISEG – International Society for Energy Geostructures and holds academic duties as member of the Department's Board. Marco Barla is the author of a textbook, holds four patents (Enertun, Geothermskin, Optialp and Tunrefit) and published around two hundred scientific papers in international, and national journals and conference proceedings. He gained more than 20 years of experience as a consultant and founder of Geosolving srl, a full engineering company formerly a spin-off of the Politecnico di Torino.



***This webinar series is intended to retain the legacy of Prof. Chandrakant Desai for his original and seminal contributions to Geomechanics.**